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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,522	09/23/2003	David A. Jackson	66396-057	2568

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EXAMINER

COHEN, AMY R

ART UNIT PAPER NUMBER

2859

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/667,522

Applicant(s)

JACKSON ET AL.

Examiner

Amy R. Cohen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-16 is/are allowed.
- 6) ☒ Claim(s) 1-10, 12 and 17-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>Third Party Sub. 5/12/05</u> . |

DETAILED ACTION

Claim Objections

1. Claim 13 is objected to because of the following informalities:

Claim 13 does not have a period completing the sentence.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 26, 27, 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Jackson (U. S. Patent No. 5,724,743).

Jackson teaches an image-based position determination system (Fig. 2 and 110) for optically scanning a target device related to an object, the system comprising: at least one camera and light subsystem (122), each subsystem having: an image sensing device (148) configured to view the target device (126) and to generate image information indicative of geometric characteristics of the target device (Col 13, lines 1-27 and Col 21, line 31-Col 22, line 61); at least one light emitting diode (142) operatively coupled to a strobe circuit, the at least one diode and circuit being configured to emit strobed light thereby illuminating the target device such that the light is retro-reflected to the image sensing device and the image sensing device detects and forms an image of the target (Col 7, lines 15-50 and Col 20, line 25-Col 21, line 30); and a visual

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indicator (119, the image on the display of the computer is a visible indicator that indicates whether the light emitting diode(s) is/are operative since if they are operative, an image will be obtained) for indicating a manner by which the object should be manipulated such that the image sensing device obtains an image of the target device in a different position (Col 23, lines 39-47, the visual indicator indicates “actual depictions of the locations and parts to be adjusted to provided corrective actions” i.e., different positions) and a data processing device (32, 34, 36) configured to couple to the visual indicator and the image sensing device to determine the orientation of the object based on the generated target image (Col 13, lines 1-27 and Col 21, line 31-Col 22, line 61).

Jackson teaches an image-based position determination system (Fig. 2 and 110) for optically scanning a target device related to an object, the system comprising: image sensing means (148) for viewing the target device (126) and for generating image information indicative of geometric characteristics of the target device (Col 13, lines 1-27 and Col 21, line 31-Col 22, line 61); light emitting means (142) for emitting strobed light thereby illuminating the target device such that the light is retro-reflected to the image sensing means and the image sensing means detects and forms an image of the target (Col 7, lines 15-50 and Col 20, line 25-Col 21, line 30); and visual indicator means (119, the image on the display of the computer is a visible indicator that indicates whether the light emitting diode(s) is/are operative since if they are operative, an image will be obtained) for indicating a manner by which the object should be manipulated such that the image sensing means obtains an image of the target device in a different position (Col 23, lines 39-47, the visual indicator indicates “actual depictions of the locations and parts to be adjusted to provided corrective actions” i.e., different positions); and a

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data processing device (32, 34, 36) configured to couple to the visual indicator means and the image sensing means to determine the orientation of the object based on the generated target image (Col 13, lines 1-27 and Col 21, line 31-Col 22, line 61).

Jackson teaches a three-dimensional camera based position determination system (Fig. 2 and 110), comprising: an optically scannable target device (126) fixedly attached to a target object; at least one camera and light subsystem (122, 124), each subsystem having: an image sensing device (148) configured to view the optically scannable target device and to generate image information indicative of geometric characteristics of the target device; and at least one light emitting diode (146) operatively coupled to a strobe circuit, the at least one diode and circuit being configured to emit strobed light thereby illuminating the optically scannable target such that the light is retro-reflected to the image sensing device and the image sensing device detects and forms an image of the target (Col 20, lines 55-67); a data processing device (32) operatively coupled to the image sensing device, the data processing device being configured to determine the orientation of the target object based on the generated target image (Col 13, lines 1-27 and Col 21, line 31-Col 22, line 61); a target object indicator (119, the image on the display of the computer is a visible indicator that indicates the status) that displays the status of the target acquisition by the data processing device, wherein the status of the target acquisition indicates whether an obtained image of the scannable target device is acceptable (Col 23, lines 39-47), and directional means for indicating the direction in which the target object should be repositioned, and for indicating whether the target object has been properly positioned (Col 13, lines 1-27 and Col 23, lines 39-47).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-9, 12, 17-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson (U. S. Patent No. 5,724,743) in view of Butler (U. S. Patent No. 4,718,759).

Regarding claims 1-9, 12: Jackson discloses a three-dimensional camera based position determination system (Fig. 2 and 110), comprising: an optically scannable target (126) device fixedly attached to a target object (112-115); at least one camera and light subsystem (122), each subsystem having: an image sensing device configured to view the optically scannable target device and to generate image information indicative of geometric characteristics of the target device (148); and at least one light emitting diode (142) operatively coupled to a strobe circuit (Col 7, lines 45-50), the at least one diode and circuit being configured to emit strobed light thereby illuminating the optically scannable target such that the light is retro-reflected to the image sensing device and the image sensing device detects and forms an image of the target (Col 7, lines 15-50 and Col 20, line 25-Col 21, line 30); and a data processing device (32, 34, 36, Fig. 2) operatively coupled to the image sensing device, the data processing device being configured to determine the orientation of the target object based on the generated target image; and a visible indicator (119, the image on the display of the computer is a visible indicator that indicates whether the light emitting diode(s) is/are operative since if they are operative, an image will be obtained) that emits light within the visible spectrum, thereby indicating that the at least

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one light emitting diode is operative (the image on the display of the computer is a visible indicator that indicates whether the light emitting diode(s) is/are operative).

Jackson discloses the position determination system wherein the visible indicator emits lights within the visible spectrum (the computer display, 119, emits lights within the visible spectrum), and thereby indicates the at least one light emitting diode is operative.

Jackson discloses the position determining system wherein the at least one light emitting diode is an array of light emitting diodes (Col 21, lines 1-15).

Jackson discloses the position determining system wherein the number of light emitting diodes in the array is sixty-four (Col 21, lines 1-15).

Jackson discloses the position determining system wherein the target object is a vehicle wheel (112-115), and the data processing device is further configured to determine proper wheel alignment based on orientation of the vehicle wheel (Abstract).

Jackson discloses the position determining system wherein the image sensing device includes an electronic shutter that is synchronized with the at least one strobed light emitting diode such that an image is captured only when a target is illuminated (Col 7, lines 15-50).

Jackson discloses the position determining system wherein the image sensing device sensing device is a charge-coupled device video camera (Col 21, lines 16-20).

Jackson discloses the position determining system comprising: a current source configured to supply a current to the at least one light emitting diode (Col 21, lines 1-15, current must be supplied since the device is electronic).

Regarding claims 17-25: Jackson discloses a three-dimensional camera based position determination system (Fig. 2 and 110), comprising: sensing means (148) for sensing an image of

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a target device (126), and generating image information indicative of geometric characteristics of the target device; and emission means for emitting strobed light that illuminates the optically scannable target such that the light is retro-reflected to the image sensing device and the image sensing device detects and forms an image of the target (Col 7, lines 15-50 and Col 20, line 25-Col 21, line 30); and data processing means (32, 34, 36, Fig. 2) for determining the orientation of the target object based on the generated target image (Col 20, line 25-Col 21, line 56); and visible indicator means (119, the image on the display of the computer is a visible indicator that indicates whether the light emitting diode(s) is/are operative since if they are operative, an image will be obtained) for visibly indicating whether the emission means is operative (the image on the display of the computer is a visible indicator that indicates whether the light emitting diode(s) is/are operative).

Jackson discloses the position determination system wherein the visible indicator emits lights within the visible spectrum (the computer display, 119, emits lights within the visible spectrum), and thereby indicates the at least one light emitting diode is operative.

Jackson discloses the position determining system wherein the target object is a vehicle wheel (112-115), and the data processing device is further configured to determine proper wheel alignment based on orientation of the vehicle wheel (Abstract).

Jackson discloses the position determining system wherein the image sensing device includes an electronic shutter that is synchronized with the at least one strobed light emitting diode such that an image is captured only when a target is illuminated (Col 7, lines 15-50).

Jackson discloses the position determining system comprising: attachment means (128) for fixedly attaching an optically scannable target device (130) to a target object (Fig. 9).

Jackson discloses the position determining system comprising directional means for indicating the direction in which a target object should be repositioned, and for indicating that a target object has been properly positioned (Col 21, line 31-Col 22, line 61).

Jackson discloses the position determining system comprising: a target object indicator means for indicating that the sensing means is sensing the target object (Col 13, lines 1-27).

Jackson discloses the position determining system comprising: a target object indicator means for indicating the state of the target acquisition by the data processing device (Col 13, lines 1-27).

Jackson does not disclose a position determining system wherein the light emitting diode emits an invisible light; wherein the light is infrared light.

Butler discloses a position determining system (Fig. 1) wherein the light emitting diode emits an invisible light; wherein the light is infrared light (Col 7, lines 28-42 and Col 16, lines 5-9).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the position determining system of Jackson so that the light emitting diode emit infrared light, as taught by Butler, since Butler discloses that infrared light is more accurately read electronically (Butler, Col 7, lines 39-42).

Regarding the number of invisible light emitting diodes in the array being eighty: Jackson and Butler disclose a position determining system where the number of invisible light emitting diodes in the array is sixty-four. However, to choose a value for the number of diodes in the array to be eighty, absent any criticality, is only considered to be the "optimum" value of the number of diodes in the array, as stated above, that a person having ordinary skill in the art

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would have been able to determine using routine experimentation based, among other things, on the desired accuracy and since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the number of invisible light emitting diodes in the array of Jackson and Butler to have eighty invisible light emitting diodes in order to have more diodes in the array, increasing the accuracy of the array and hence, the accuracy of the position determining system.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson and Butler as applied to claims 1-9, 12, 17-25 above, and further in view of Stam et al. (U. S. Patent No. 5,923,027).

Jackson and Butler disclose the position determining system as described above in paragraph 5.

Jackson and Butler do not disclose a position determining system wherein the image sensing device is a complimentary metal oxide semiconductor camera.

Stam et al. discloses an image sensing device, which is a complimentary metal oxide semiconductor camera (Col 5, lines 45-58).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the image sensing device of Jackson and Butler to be a complimentary metal oxide semiconductor camera, as taught by Stam et al., since the complimentary metal oxide semiconductor camera is both economical and highly sensitive and therefore, more cost effective and accurate (Stam et al., Col 5, lines 45-58).

Allowable Subject Matter

7. Claims 13-16 are allowed.

Reasons for Allowance

8. The following is an examiner's statement of reasons for allowance:

The prior art of record does not disclose or suggest a three-dimensional camera based position determination system comprising a target object indicator disposed on the camera and light subsystem, configured to display the status of the target acquisition by the data processing device, wherein the status of target acquisition indicates whether an obtained image of the scannable target device is acceptable in combination with the remaining limitations of the claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

9. Applicant's arguments filed April 5, 2005 with respect to claims 1-10, 12, 17-28 have been fully considered but they are not persuasive.

Regarding the use of the monitor 119 of Jackson in the rejection, Examiner contends that as claimed in independent claims 1, 17, 26-28, the monitor can be considered a visual indicator since the image on the display of the computer indicates whether the light emitting diode(s) is/are operative since if they are operative, an image will be obtained. If the light emitting diodes

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are not operative but the device is calibrated and the targets are within range, no display or data will be obtained.

Regarding claims 26 and 27, "the direction by which an object should be moved" is indicated on the visual indicator 119 as stated in Jackson, Col 23, lines 39-47.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy R. Cohen whose telephone number is (571) 272-2238. The examiner can normally be reached on 8 am - 5 pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. Gutierrez can be reached on (571) 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ARC
June 13, 2005



Christopher Fulton
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